

does not use this time. The RF signal in the '183 patent is for the sole purpose of conveying data pertaining to the FSK acoustic signal from station 1 to station 2.

not claimed This clearly distinguishes the present invention from the '183 patent in that the present invention utilizes the transit time of the RF signal as an indispensable integral factor in calculating the distance between RF equipped devices. The present invention uses both an acoustic signal and an RF signal to determine the distance between a pair of RF equipped devices. The receiver receives both signals at different times because they travel at much different speeds. Distance is calculated based on the perceived reception time difference between the two signals. This will lead to an accurate distance measurement so long as the two signals were transmitted at the same time or if there is a known delay between the transmission of the RF signal and the acoustic signal that can be compensated for in the receiver.

Thus, the '183 patent calculates distance based on the transit time between a transmitter and a receiver of an acoustic signal only. The novelty and inventive step in the '183 patent was directed toward a more precise method for determining the time interval. Once the time interval was determined, distance was calculated using standard physics equations since the speed of propagation of a sound wave is known.

not claimed By contrast, the present invention utilizes the delta time between received signals, one acoustic and one RF, that were each transmitted at a known time. By knowing the delta time and the speed of each signal, a distance can be calculated since the time of transmission is known. The primary difference between the '183 patent and the present invention is that the present invention definitely uses the transit time of the RF signal while the '183 patent characterizes the transit time of the RF signal as negligible using it only as an information signal to assist in the FSK encoding/decoding scheme. In fact, the '183 patent relies on the fact that the RF signal is so much faster than the acoustic signal that the information it is carrying will be already available for use by the time the acoustic signal arrives.

In the present office action, the Examiner has characterized col. 3, lns. 44-66 of the '183 patent as teaching "determining the time difference between the arrival of the first FSK bit sequence (i.e., digital audio samples) and the acoustic signal." This is simply incorrect. The above cited passage teaches that the RF signal is assumed to arrive instantaneously at the receiver. The receiver is now in possession of the decoding scheme. Now the transmitter can begin transmitting the acoustic version of the FSK signal. It is received and operated on by the receiver using the previously

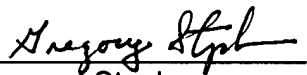
transmitted RF FSK signal. This processing yields a precise transit time for the FSK sequence of the acoustic signal. Finally, the '183 patent characterizes the distance measurement thusly, "[a]s shown in Fig. 4, the rather straightforward derivation of distance between loudspeaker 11 and microphone 12 is shown as the total time from start to stop minus the known time required to generate the FSK sequence times the speed of sound and air, which is a function of temperature." Clearly, the distance measurement is based solely on the acoustic signal and not on a received time delta between an RF signal and an acoustic signal.

The Examiner has mis-characterized and mis-applied the '183 patent to the recited elements and steps of the present invention. Specifically, the '183 patent does not utilize the arrival time difference between the digital audio samples (RF signal) and its counterpart analog acoustic signal to calculate distance between two RF equipped devices. This element/step is crucial to the present invention and is clearly recited in each of the independent claims of the present invention.

As a result, the '183 patent does not teach or disclose each and every step or element of the present invention as required under 35 USC 102(b). Therefore, applicant respectfully requests reconsideration and withdrawal of the 35 USC 102(b) rejection as applied to claims 1, 2, 4, 6, 7, 9 and 10.

Respectfully submitted,

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